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## ARABIA.

*Report of the commission of hygiene for the Hedjaz.*

(Presented to the superior council of health, November 24-5, 1895.)

*Members.*—His Excellency Ahmed Midhat Effendi, vice-president of the council; His Excellency Dr. Cozzonis Effendi, inspector-general; Honorable Fewzi Effendi, member; Honorable Ahmed Bey; Dr. Dickson, delegate of England to the superior council of health; Dr. Delacour, delegate of France to the superior council of health; Dr. Stecoulis, delegate of the low countries to the superior council of health.

Secretary, Dr. Stiepovich.

[Translated in this bureau.]

The commission, having examined in detail the general report of Dr. Cassim Izzedin Effendi, sanitary physician to the Hedjaz during the last pilgrimage, and having taken the opinion of those of its members who visited the Hedjaz in the quality of imperial commissioners, proposes the following modifications of its last report, submitted to the superior council of health at its meeting January 7-19, 1895:

## MEASURES TO BE APPLIED DURING THE PILGRIMAGE.

1. *Medical service.*—Experience of the last pilgrim season shows that the addition of two sanitary physicians to the four annually sent to Mecca will constitute an effective medical corps, prepared to meet all the requirements of the service. The assistance of the eight military physicians may, therefore, be dispensed with. The six sanitary physicians shall be chosen and sent by the sanitary administration. The duration of their mission shall not exceed four months. They shall be stationed at Mecca from the 1st of Ramazem to the end of the month of Zilhidjé (February 26 to May 26).

2. *Service of pharmacy.*—The central pharmacy established in the sanitary office at Mecca shall always remain open. It shall serve as a dispensary, and a physician shall be always present to examine all persons presenting themselves for examination. Medicines shall be dispensed gratuitously. Two pharmacists shall be appointed and sent to Mecca at the same time with the six sanitary physicians.

3. *Sanitary police.*—The corps of agents of the sanitary police shall be charged with carrying out the measures prescribed by the director of the service. These agents shall be three in number; one of the number to understand Turkish and Arabic, and the reports and accounts to be made out in both languages.

The sanitary physicians shall make a daily visit to the pilgrim lodgings, and wherever they find them to be overcrowded, or to present any unsanitary conditions, they shall note the facts and give the necessary orders. The sanitary agents shall do all in their power to execute these orders, and shall have recourse to the local authorities only in case the guide in charge of the groups of pilgrims shall interfere with, or interpose obstacles to, their execution.

The sanitary agents, both at Mina and Mecca, shall have constant and rigorous oversight of the food served to pilgrims. Articles found to be deteriorated, or in any way prejudicial to health, shall, on advice of the physicians, be destroyed.

On the arrival of pilgrims at Djeddah or Mecca, the delils (guides) shall report to the sanitary office the number and nationality of the pilgrims in their charge. They shall also indicate the houses in which the said pilgrims are to lodge. The several apartments composing these lodging houses shall be previously measured, under direction of the sanitary authority, and the number of pilgrims which each apartment can contain shall be inscribed on the door, underneath the usual number. The guides shall be furnished each with a certificate, stating the number of pilgrims to be lodged, in order to prevent violation of these orders.

The guides shall be required to engage a porter for each pilgrim lodging house, who shall be charged with the thorough cleaning of the house.

As soon as a pilgrim is taken ill the guide shall report the fact to the sanitary authority, and shall have the patient transferred to the hospital. In case of the death of a pilgrim the guide shall make a declaration to the sanitary office, stating the name, nationality, place of birth and age of the deceased, the duration of his malady, and the date of his arrival in the Hedjaz, and shall give any further explanations required by the sanitary physician charged with examining the body.

The holy places shall be visited by pilgrims only at stated hours fixed by the sheriff of Mecca.

All guides violating these orders shall be reported for punishment to the sheriff of Mecca by the director of the sanitary service.

4. *Service of accounts.*—The sanitary physician of Mecca being chief of the local sanitary service, the sum allotted for the maintenance of the service of the Hedjaz shall be sent to him directly, each year, by the central sanitary administration in the form of an order on the Imperial Ottoman Bank. He shall be held responsible for its disbursement. A competent cashier and clerk shall be appointed to assist him in the discharge of the financial management of the service.

5. *Hospital service, transportation of the sick, and burial of the dead.*—Pending the completion of the large hospital to accommodate 300 beds, the construction of which has been authorized by the Sultan, the number of beds in the provisional hospital shall be increased from 50 to 100. The sum allotted for the maintenance of this hospital shall be 60,000 piasters.

During the entire pilgrim season the sick shall be transported in litters, attended by bearers and guards. Two large hospital ambulances shall also be provided, and two ambulances for carrying the dead to the cemetery.

6. *Street cleaning.*—The sweeping and watering of the streets, especially in the commercial centers and public thoroughfares, shall be under the constant inspection of the sanitary physicians and agents. Filth of all sorts shall be removed and conveyed outside the city to a special place. This service shall be performed by means of tumbril carts, or, where the streets are too narrow for these to pass, by donkey transportation.

7. *Service of disinfection.*—As the city of Mecca is constantly menaced by an outbreak of cholera, it is essential to maintain a regular service of disinfection there throughout the year. To this end the employment of 7 chief guards and 20 sanitary guards is considered necessary. To these, 10 auxiliary guards should be added during the pilgrim season.

Disinfection shall be performed by means of steam. Pending the installation of stoves at Mecca, the clothing and effects of persons who have died of cholera, smallpox, or other contagious disease shall be destroyed by fire.

8. *Vaccination.*—Vaccine tubes imported from Constantinople generally deteriorate under the influence of the extreme heat, and are not efficacious against the smallpox, which appears annually in the Hedjaz and causes considerable mortality. It is advisable to create two vaccine establishments, one at Mecca and one at Medina.

#### MEASURES TO BE TAKEN AT ARAFAT.

Inspection at Arafat being impossible during the ceremonies, which last only ten hours, the physicians will confine themselves, after the departure of the pilgrims, to interring the dead and removing the sick, and these duties accomplished they shall take the proper means to render the place salubrious.

The water supply comes from the spring known as "Aïn Zobéida," and is conducted by means of a conduit into a large basin divided into five compartments, which serve respectively for drinking fountains and watering troughs. Most of the pilgrims bathe and wash their linen at these reservoirs. It is of the first necessity that the drinking water should not be polluted. The highest of the reservoirs should be covered with plank and provided with faucets.

#### MEASURES TO BE TAKEN AT MINA.

The pilgrim tents being pitched close to each other and without any system, sanitary surveillance is almost impossible. It is strongly urged that a camp system be adopted. As almost all pilgrims make their Hadj or pilgrimage under the conduct of a guide, the Imperial Government should order the division of that part of the valley of Mina occupied by the pilgrims into lots, each lot to be assigned to a guide, according to the number of pilgrims in his charge. Ten days before the religious celebrations begin the guide should erect the tents for his pilgrims in the form of a regular encampment. He should be required to sweep his lot twice a day. These improvements would considerably facilitate the visits of medical inspection by day or night. It should also be the guide's duty to report the occurrence of any case of sickness on his lot.

The most important sanitary measure at Mina is in connection with the burial of sacrificed animals. Sacrifice among the tents must be strictly prohibited. It should be authorized only at localities outside the camp and trenches should be dug to receive the remains of the sacrificial animals. These trenches should be surrounded with a military cordon extending from one mountain to the other. The guards, to the number of 30, should be taken from the corps of disinfection. They should be divided into 6 gangs of 5 men each under the orders of a chief guard. They should have general charge of disinfection and sanitation. The trenches for animal refuse should be not less than 4 meters deep. They should be filled in with a layer of quicklime and over it a layer of sand. They should not be reopened until after the lapse of three full years.

Camp refuse should be carried outside the camp to a designated place.

The commission recommends strongly that the water-supply system from the spring of Ain Zobéida, which at present is carried a certain distance into the valley, shall be extended to the pilgrim camp. In anticipation of the arrival of the pilgrims the cisterns now in use should be thoroughly cleaned and filled with fresh and clean water.

The total expense for carrying out these projected measures of sanitary reform for Mecca and the Holy Places is 462,080 piasters.

#### MEASURES TO BE TAKEN AT DJEDDAH.

It is notorious that a large number of the pilgrims landing at Djeddah are extremely poor and have no means of procuring a lodging. Consequently they take up their abode in the streets and in the open space between the wharfs and the city inclosure, and create conditions favorable to a cholera outbreak if any germ exists among the pilgrims. It is clearly of the first necessity to provide shelter gratuitously for these indigent pilgrims. It is suggested that large barracks be erected at Djeddah for the general reception of all classes of pilgrims. The stay at Djeddah is short, the pilgrims passing on with little delay to Mecca. The barrack system is desirable from a sanitary point of view as it allows of complete medical supervision and inspection of the entire mass of pilgrims at this halting point on their way to Mecca.

The street-cleaning system at Djeddah leaves much to be desired. Only the larger streets in the heart of the town are swept. In the smaller streets and lanes detritus of all sorts accumulates in such quantities as frequently to block up the entrance to the poorer houses. The service of street cleaning should be placed under the immediate control of the sanitary inspector at Djeddah, who should see that the city is kept clean, especially when it is crowded by the pilgrims returning from Mecca. It is especially necessary to provide public latrines at the custom-house and the sanitary office. These should be frequently emptied and disinfected with lime water.

The sanitary inspector should exercise, through his agents, a rigorous inspection of the markets in which food, and especially fruit, is sold to the pilgrims. All stale articles, poor meat, and unripe fruit should be prohibited sale and, if possible, destroyed.

#### MEASURES TO BE TAKEN AT YAMBO.

The city of Yambo, situated 180 marine miles north of Djeddah, is the port of embarkation of pilgrims bound for the north who have not visited Medina prior to the feasts of Courban-Bairam.

Here sanitary measures are greatly neglected, and locomotion through the narrow streets of the city is very difficult. The accumulation of filth and street detritus creates deplorable conditions in the city and its suburbs.

Yambo has no supply of good potable water and the pilgrims have often suffered from a water famine. The supply is from rains, which are by no means frequent, and the water is collected in cisterns. As it is very seldom renewed, organic matter accumulates in such proportion in the cisterns as to render the water in them unfit for use until it is boiled.

It is of the utmost importance that the city of Yambo should be placed under sanitary surveillance similar to that recommended for Djeddah and proportioned to the importance of the number of pilgrims who pass through it. This number does not exceed 5,000.

The pilgrim camps should be constantly under inspection by a squadron of guards, charged with the removal of all impurities. Public latrines in sufficient number should be established.

As the city is entirely without hospital, pharmacy, or physician, the serious attention of the Government is directed to the danger to public health presented by these deplorable conditions. Those among the pilgrims and inhabitants who chance to fall ill are left to their own resources until they recover or die. It is a matter of urgent need to erect a hospital provided with a pharmacy and medical service adapted to the needs of the place.

The expenses necessitated by the organization of this service, the importance of which is indisputable, should be defrayed from the funds of the municipality.

#### MEASURES TO BE TAKEN AT MEDINA.

The hygienic conditions of the city of Medina being sufficiently good and the sojourn of the pilgrims there being very brief, the commission has no suggestions to make beyond recommending that the prophylactic measures now in force be applied with the

same zeal now shown. The city is abundantly supplied with excellent potable water from the spring of "Aïn Zarca," brought by subterranean aqueduct from Mount Kouba. The spaces about the public fountains should be kept in a state of exemplary cleanliness, and the pilgrims should not be permitted to wash their linen at the fountains.

#### PERMANENT MEASURES TO BE TAKEN IN THE CITIES FREQUENTED BY PILGRIMS.

The permanent measures to be applied in the cities of the Hedjaz concern potable water, refuse pits, and the salt-water ponds which occur in the vicinity of Djeddah and Yambo.

As regards the water supply of these cities, Djeddah formerly received water from springs situated at the foot of a low range of hills at a distance of 4 or 5 kilometers east of the city, but these springs have been sacrificed to the cupidity of speculators, who set up reservoirs in the vicinity of the city and proceeded to supply the citizens and pilgrims with stagnant and unwholesome water. This water, being the drainage from the rainfall in the vicinity of the reservoirs, is abundantly charged with organic matter from the soil over which it has flowed. Seven years ago the Imperial Government undertook the humane task of bringing the water from one of these springs in earthen conduits to the city and distributing it by means of 9 public fountains. Unfortunately, defective tubing or the malicious interference of the proprietors of the reservoirs caused leakages in the pipes and a waste of water, consequently a diminished supply at the public fountains. The Government is strongly urged to authorize the laying of cast-iron pipes and the erection of additional fountains. The water of the public cisterns should be prohibited as drinking water and used only for washing and other domestic needs. A special service should be organized for inspecting the cisterns and emptying and washing them when the water in them is low.

The city of Yambo should be supplied, if possible, with water from the wells of Yambo Nahil, which are situated 4 or 5 kilometers from the city. The water should be conducted in iron pipes and distributed by means of 4 or 5 fountains.

The potable water of Mecca and Medina being derived from springs, the commission has no recommendations to make with regard to it.

*Refuse trenches.*—As the cities of the Hedjaz possess no system of sewerage, except in some quarters of Mecca, the refuse of the houses is thrown into a sort of trench dug at the entrance of each house. As soon as one trench is full another is dug, until the street and the entire quarter are filled up. These trenches not being cemented, infiltration occurs and the atmosphere of the street is charged with a highly deleterious, mephitic odor.

It is incumbent upon the Imperial Government to abolish this unsanitary system and severely to inhibit its practice. Until a proper system of sewerage is adopted in these cities the refuse of all descriptions should be conveyed in barrels, hermetically sealed, outside the city to a place set apart for the purpose, emptied into large trenches, and covered with quicklime. Until this important measure is carried into execution, all public and private latrines must be required to be daily disinfected with limewater and sulphate of copper.

*Salt-water ponds.*—The salt-water ponds formed by the coves of the sea, which lie to the north and south of the cities of Djeddah and Yambo, constitute the principal cause of the marsh miasma, which, joined to other allied sources, lays hold of debilitated constitutions in the form of pernicious attacks. These attacks carry off the patient so rapidly that there is often no time for medical aid. It is the unanimous opinion of the commission, based on numerous reports on the subject, that the Imperial Government should have these ponds filled up. The space around the health office at Djeddah should also be covered with a thick layer of earth to prevent the seepage of sea water at high tide and the stagnation of rain water, which are the source of miasmatic exhalation, deleterious to the health of pilgrims landing in that vicinity.

Convinced that the Imperial Government is strongly interested in all that concerns hygienic reform in the Hedjaz, the commission closes with confident expectation that its recommendations for the protection of the health of moslem pilgrims will receive full and entire approbation.

Read and adopted in session of the superior council of health, November 24 and 25, 1895.